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VARIABLES ASSOCIATED WITH VOCATIONAL MATURITY.

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EVIDENCE ABOUT THE CONSTRUCT VALIDITY OF PRESUMED VOCATIONAL MATURITY FACTOR SCORES WAS OBTAINED BY STUDYING THE RELATIONSHIP BETWEEN FACTORS OF VOCATIONAL MATURITY AND A GROUP OF CONCURRENT VARIABLES DEEMED RELEVANT TO VOCATIONAL MATURITY. THESE VARIABLES WERE CLASSIFIED INTO FIVE GROUPS--FAMILY SOCIOECONOMIC STATUS, ABILITY AND ACHIEVEMENT, VOCATIONAL ASPIRATION, PARTICIPATION, AND DESCRIPTION. SCORES ON EACH VARIABLE WERE OBTAINED FOR THE SAME 103 BOYS IN BOTH THE NINTH AND 12TH GRADES. SCORES WERE CORRELATED AT EACH OF THE GRADE LEVELS WITH SOME VARIABLES TREATED AS CONTINUOUS MEASURES AND OTHERS DICHOTOMIZED. COEFFICIENTS OF CORRELATION BETWEEN THE VARIOUS TYPES OF MEASURES WERE COMPUTED. FACTOR SCORES WERE OBTAINED FOR EACH BOY AT BOTH GRADE LEVELS, AND THE SCORES ON EACH FACTOR WERE CORRELATED WITH THE SCORES ON EACH VARIABLE. A GENERAL DISCUSSION OF THE RESULTS IS PROVIDED. "OCCUPATIONAL INFORMATION--TRAINING AND EDUCATION REQUIREMENTS" APPEARS AS AN ADEQUATE MEASURE FOR NINTH AND 12TH GRADES. "CONSIDERATION OF OCCUPATIONAL ALTERNATIVES AND CONTINGENCIES" APPEARS AS AN ADEQUATE 12TH-GRADE MEASURE. TABLES CONTAIN VARIABLE MEASURE INFORMATION AND CORRELATION DATA. THIS PAPER WAS PRESENTED TO SESSION 177 OF THE AMERICAN PERSONNEL AND GUIDANCE ASSOCIATION CONVENTION (WASHINGTON, D.C., APRIL 5, 1966). (PS)

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Title - VARIABLES ASSOCIATED WITH VOCATIONAL MATURITY

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Introduction

This paper describes a study of the relationship between the factors of vocational maturity and a group of concurrent variables which are deemed to be relevant to vocational maturity. The purpose of this study is to acquire further understanding of the factors and to investigate the construct validity of the factors as measures of vocational maturity.

Procedure

A group of variables was selected which are not themselves deemed measures of vocational maturity but which should be relevant to it. These variables were classified into five groups, and are presented in Table 1 along with a brief description of each variable. The five groups into which they are classified are: Socioeconomic Status of the Family; Ability and Achievement; Vocational Aspiration; Participation; and Description. Scores on each variable were obtained for 103 boys in the ninth grade and for the same 103 boys in the twelfth grade. As is noted in Table 1 not all of the variables were used in both grades. In order to examine the relationships scores were intercorrelated at each of the grade levels. Some of the variables were treated as continuous measurements while others were dichotomized. Appropriate coefficients of correlation were computed between the various types of measures. After these relationships were examined, the correlations between the variables and the factors were explored. Factor scores were obtained for each boy on each of the twenty-four factors at the ninth grade and on each of the twenty-five factors at the twelfth grade, and the scores on each factor were correlated with the scores on each variable.

Results

Tables 2 and 3 present the significant intercorrelations among the variables believed to be relevant to vocational maturity. Since this is an exploratory study from which hypotheses will be derived to be tested on another group of subjects the two-tail test of significance was used. Table 2 presents the intercorrelations of the variables at the 9th grade: there are significant relationships between family socioeconomic status and boy's ability and school achievement. The boys with good achievement also have higher vocational aspiration levels and vocational aspiration level is significantly related to parental occupational level. The negative correlations associated with age, typical when dealing with one grade group, indicate that the younger boys have higher measured ability and achievement, have parents in higher level occupations, and themselves have higher vocational aspirations than do older boys. The correlations of birth order

with ability and achievement bear out recent research findings that the first born tend to have higher academic achievement than other children (Warren, 1966).

Table 3 presents the significant intercorrelations among the variables at the 12th grade, and indicates generally the same relationships as at the 9th grade. It can be concluded that during the high school years achievement and ability are associated with family socioeconomic status and vocational aspiration level. The inclusion of measures of participation in in-school and out-of-school activities is related to ability, achievement, parental occupational level and vocational aspiration level. Although the out-of-school activities are relevant to the boy's preferred occupation, these activities do not include either after-school work or summer employment. In fact, as the negative correlation indicates, the higher the boy's vocational aspiration the less likely he is to hold an after-school job.

Turning to the primary focus of this study, the remaining tables present the correlations between scores on these variables and the factor scores. In 9th grade nine factors showed some significant correlation with the variables, and of these nine, five showed significant relationship to more than two variables. These five factors and their correlations with the variables are shown in Table 4. In general, these factors show the greatest number of correlations with ability and achievement, and with vocational aspiration level. Factor 1, Occupational Information: Training and Educational Requirements, and Factor 8, Occupational Information: Financial Requirements, correlate significantly only with these variables. Factor 14, Socioeconomic Accessibility of Preference, is basically a measure of the degree to which the occupational level of the boy's preference approximates the occupational level of his parents. It and factor 17, Agreement Between Ability and Preference, may be termed measures of wisdom or realism of occupational preference; both show interesting relationships which result from the fact that people who are placed high cannot overaspire, while those who are placed low are not likely to aim still lower. The higher the socioeconomic status of the family the more socially and economically accessible will the boy's preferred occupation be to him, and the higher the boy's vocational aspiration level the less socially and economically accessible it will be. The correlations also indicate that boys whose preferences are socioeconomically accessible to them have parents who have vocational aspirations for them. The correlations with factor 17, Agreement Between Ability and Preferences, suggest that the greater the ability of the boy the more likely he is to prefer an occupation which is in keeping with his ability, and that the higher the vocational aspiration of the boy the less likely is he to prefer an occupation in keeping with his ability. Factor 19, Specificity of Planning for Qualifying for Post-High School Training or Beginning Job, correlates with two measures of achievement and with agreement between aspiration and expectation. Thus, the closer one's aspiration is to one's expectation the more specific will planning be for initiating occupationally related activities.

At the 12th grade, 19 of the 25 factors showed some significant correlations with the variables, seven having more than two significant correlations. Time does not permit a complete description of all of the factors so three are selected for discussion here. These three factors and their significant correlations with the variables are shown in Table 5. The four which are not discussed are shown in Table 6. The first factor shown in Table 5, Occupational Information: Training and Educational Requirements, also showed significant correlations with the variables at the 9th grade. At the 12th grade it not only showed relationship with vocational aspiration level, ability, and achievement but also with socioeconomic status of the family and with most of the participation measures. It does not show relationship with either after-school or summer employment, which suggests that the type of information measured by factor 1 is not gained through experience directly with work. Not only do most of the employment opportunities open to high school boys not require much training or advanced education, but they result in acquiring

no such relevant information. Factor 16, Agreement Between Ability and Preference, was also found to have significant correlations at the 9th grade and again, it correlated with ability and some of the achievement measures. At the 12th grade it also is related to parental occupational level but not to the boy's vocational aspiration level. Factor 24, Consideration of Occupational Alternatives and Contingencies, did not appear at the 9th grade but has interesting correlations with the variables at the 12th grade. Besides correlating with parental occupational level and participation in in-school activities it is also related to after-school and summer employment. This suggests that boys need exposure to the work world in order to become aware of obstacles which may hinder the implementation of their vocational plans. It also suggests that work experience provides information about alternative means of implementation.

Discussion

The intent of this investigation was to obtain evidence about the construct validity of presumed vocational maturity factor scores. Construct validity is investigated when the underlying quality or trait of the measurement being studied is of primary importance, and when there exist no definitive criteria of the underlying trait which can be measured (Cronbach and Meehl, 1955). The primary focus of this research is on the construct of vocational maturity which is believed to underlie the factor scores. If a definitive criterion measure of vocational maturity existed it would be possible to correlate the factor scores with this criterion measure, and the resulting correlation coefficient would be an index of the validity of the factor scores. Since no such criterion exists it is necessary to approach the determination of validity indirectly, and this study is a report of one such approach. To the extent that the status and achievement variables reported in this study are associated with vocational maturity, and to the extent that scores on these variables are correlated with scores on the factors, evidence is provided for the construct validity of the factor scores as measures of vocational maturity. A brief review of research linking most of these status and achievement variables to vocational behavior was presented in a previous monograph of the Career Pattern Study (Super and Overstreet, 1960), and a later paper will describe their relationship with measures of young adult vocational behavior. The results reported here provide evidence for the relationship between the variables and some of the factors.

Five factors at the 9th grade and seven factors at the 12th grade showed more than two significant correlations with the variables. These correlations tend to support the construct validity of the factors. However, the degree of support is certainly greater for some factors than for others. The most support is offered for factor 1, Occupational Information: Training and Educational Requirements, which showed many correlations with the variables at both levels. This may be the most appropriate measure of vocational maturity during the high school years. This factor loads on many elements that are relevant to the high school years. This factor loads on many elements that are relevant to the high school years, such as information on required high school background, use of resources for orientation, and economic requirements for getting into occupations. The training and educational elements which this factor taps most heavily measure the boy's information about types and content of training, its length and location. It seems logical that boys who are vocationally mature, and who presumably are concerned about their vocational future, would first seek out this type of information. The search for this information probably begins in the freshman year and continues through the senior year.

The other factor which correlated with the status and achievement variables at both levels is Agreement Between Ability and Preference. Since this factor correlated with fewer variables than did factor 1, and since its correlations were mostly with ability and achievement, it is necessary to be cautious in evaluating it as an adequate measure of vocational maturity. This factor assesses whether the boy's ability equals the re-

quired ability for his occupational preference. Boys with high ability will necessarily score high on this factor since their ability will exceed the minimum requirements for most occupations. The negative correlation with vocational aspiration level at the 9th grade indicates much the same thing in that the lower the level of the boy's vocational aspiration the more likely he is to have the required ability and score high on this factor. However, a boy with high ability who prefers a low level occupation is not necessarily vocationally mature since he is choosing an occupation beneath his potential. Thus it is possible to score high on this factor and not be vocationally mature.

The remaining three factors which showed good correlation with the variables at the 9th grade did not do so at the 12th grade, and since there seems to be nothing inherent in these factors to make them specific to only one level, doubt is cast on their adequacy as measures of vocational maturity.

Factor 24, Consideration of Occupational Alternatives and Contingencies, correlated with a number of variables at the 12th grade but does not appear as a factor at the 9th grade. It may be that this factor is a true measure of vocational maturity for high school seniors but not for high school freshman. This conclusion is supported by its significant correlations with after-school and summer employment. It suggests that exposure to work is necessary before this factor becomes operative, and most first year high school students do not have much of a work history behind them. It can therefore be tentatively concluded that this is an adequate measure of vocational maturity at the twelfth grade. None of the factors shown in Table 6 have many correlations at the 9th grade, and there is little evidence for them as specific measures of vocational maturity at the 12th grade.

Summary

In summary, this study has presented evidence for the construct validity of two factors of vocational maturity. The first, Occupational Information: Training and Educational Requirements, appears as an adequate measure at both the 9th and 12th grade levels. The second factor, Consideration of Occupational Alternatives and Contingencies, appears to be an adequate measure specific to the 12th grade.

It must be remembered that construct validation is a continuous process towards which many studies contribute. The remaining papers in this series will report research findings which will supplement those presented.

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Table 1

THE STATUS AND ACHIEVEMENT VARIABLES RELEVANT TO VOCATIONAL MATURITY

Title	Description of Measure
Socioeconomic Status of the Family	
1) Parental Occupational Level[a]	Parental occupation measured by the Hamburger Revision of Warner Scale. A seven level scale.
2)*House Rating [a]	Houses rated on Warner Index of Status Characteristics. A seven point scale from excellent to very poor.
Ability and Achievement	
3) Ability	Scores on Verbal Reasoning Test of DAT.
4) School Curriculum	At 9th grade - regents or non-regents sections: at 12th grade - regents or local diploma.
5) School Achievement	Grade Point Average.
6) School Achievement vs Underachievement	Boy is achiever if obtained GPA was above predicted grade average and underachiever if below predicted average.
7)*Peer Acceptance	Score on "Guess Who" Test - a sociometric test.
Vocational Aspiration	
8) Boy's Vocational Aspiration Level[a]	Boy's preferred occupation rated on Hamburger Scale.
9)*Agreement Between Level of Vocational Aspiration & Expectation	Aspiration and expectation obtained from questionnaire. Each rated on Hamburger Scale. Boy scored on discrepancy between expectation and aspiration.
10)*Presence of Parental Vocational Aspiration	Information from parent interviews. Presence or absence of vocational aspiration scored.
Participation	
11)**In-School Activities - no. of activities participated in for minimum of 2 years	A count of the number of activities for minimum of 2 years.
12)**In-School Activities - total no. of activities in which boy participated.	A count of number of activities.

Table 1
(continued)

Title	Description of Measure
13)**Out-of-School Activities - no. of years of after-school employment	A count of the number of years.
14)**Out-of-School Activities - no. of years of summer employment	A count of the number of years.
15)**Out-of-School Activities - no. of years of participation in clubs and organizations for minimum of 2 years	A count of the number of activities.
16)**Out-of-School Activities - total no. of activities	A count of the number of activities.
17)**Paid Work Experience Relevant to Vocational Preference	Measure of agreement between paid work experience and vocational preference.
18)**Hobbies, Pastimes, Clubs, Organizations Relevant to Vocational Preference	Measure of agreement between these activities and vocational preference.
Description	
Age	
Birth Order	
Miscellaneous	
Stability of Preference Over Four Years	Degree of similarity of preferences at 9th and 12th grade - utilizes field and level.

*Only at 9th Grade

**Only at 12th Grade

[a]Signs of coefficients of correlation reported in this paper involving these variables were reversed when necessary.

Table 2

INTERCORRELATIONS AMONG STATUS AND ACHIEVEMENT VARIABLES RELEVANT TO VOCATIONAL MATURITY AT THE NINTH GRADE

(N = 103)

	2	3	+4	5	6	7	8	9	10	11	12
Socioeconomic Status											
1) Parental Occ. Level	44**	27**	21*	31**			20*		23*	23*	20*
2) House Rating			21*	24*							
Ability & Achievement											
3) Ability			49**	53**						42**	28**
4) School Curriculum							22*	22*		33**	21*
5) Achievement - GPA					61**		37*			23*	25*
6) Ach. vs Underach.						22*	26**				
7) Peer Acceptance											
Vocational Aspiration											
8) Boy's Voc. Asp. Level										21*	
9) Agreement - Level of Asp. & Expectation											
10) Presence of Parental Voc. Aspiration											
Description											
11) Age											
12) Birth Order											

*p _ .05 (Two-tailed Test)

**p _ .01 (Two-tailed Test)

Underlined numbers are negative correlations.

Table 3

INTERCORRELATIONS AMONG STATUS AND ACHIEVEMENT VARIABLES RELEVANT TO VOCATIONAL MATURITY AT THE TWELFTH GRADE

(N = 103)

	2	3	4	5	6	7	8	9	+ 10	11	12	13	14	15	16	17
Socioeconomic Status																
1) Parental Occ. Level	48**	36**	40**	38**		31**		25*			21*				23*	26**
2) House Rating		25*		26**												
Ability and Achievement																
3) Ability			55**	55**		34**									48**	34**
4) School Curriculum				55**		36**		24*			22*	23*			33**	
5) GPA					49**	52**	24*	31**			33**	26**			34**	30*
6) Sch. Achievement vs. Underachievement						30**	26**	20*								
Voc. Aspiration																
7) Boy's Voc. Asp. Level							21*	33**	23*		26**				32**	23*
Participation																
8) In-Sch. Act.-no. 2 yrs.								76**			26*	32**				
9) In-Sch. Act.-total no.											43**	43**				
Out-of-School																
10) No. yrs. after-sch. emp.											27**		43**			
11) No. yrs. summer emp.												22*	26**			
12) No. for 2 yrs.												58**			23*	
13) Total no.														32**	21*	
14) Pd. Wk. Exp. Relevant to Vocational Preference																25*
15) Hobbies, Pastimes & Out-of-Sch. Clubs & Orgs. Relevant to Voc. Pref.																
Description																
16) Age																
17) Birth Order																

*p _ .05 (Two-tailed Test)

**p _ .01 (Two-tailed Test)

Underlined numbers are negative correlations.

Table 4

CORRELATIONS BETWEEN STATUS AND ACHIEVEMENT VARIABLES RELEVANT TO VOCATIONAL MATURITY AND FIVE SELECTED FACTORS AT THE NINTH GRADE (N = 103)

	Parental Occ. Level	House Rating	Ability	School Curriculum	GPA	Achievement vs Underachievement	Peer Acceptance	Voc. Aspiration Level	Presence Parental Aspiration	Agreement Aspiration & Expectation	Age
Factor 1 - Occ. Info.: Training & Educational Requirements			28**	21*	24*			25*			
Factor 8 - Occ. Info.: Financial Requirements					28**	24*		20*			
Factor 14 - Socioeconomic Accessibility of Pref.	43**	21*						<u>30**</u>	26**		
Factor 17 - Agreement Between Ability & Pref.			58**	32**				<u>27**</u>			<u>29**</u>
Factor 19 - Specificity of Planning for Qualifying for Post-H.S. Training or Beginning Job					22**		20*			31**	

*p _ .05 (Two-tailed Test)

**p _ .01 (Two-tailed Test)

Underlined numbers are negative correlations

Table 5

CORRELATIONS BETWEEN STATUS AND ACHIEVEMENT VARIABLES RELEVANT TO VOCATIONAL MATURITY AND THREE SELECTED FACTORS AT THE TWELFTH GRADE (N = 103)

	Parental Occ. Level	House Rating	Ability	School Curriculum	GPA	Ach. vs Underachievement	Voc. Asp. Level	Participation in Sch. - min. 2 yrs.	Participation In Sch. - total no: act.	After-Sch. Employment	Summer Employment	Out-of-Sch. Part. min. 2 yrs.	Out-of-Sch. Part. total no: act.	Participation Relevant to Pref.	Age
Factor 1 - Occ. Info.: Training & Educational Requirements	31**	24*	26**	32**	40**		45**		35**			27**	38**	28**	<u>26**</u>
Factor 16 - Agreement Between Ability & Preference	28**		63**	42**	38**										<u>23*</u>
Factor 24 - Consideration of Occupational Alternatives & Contingencies	33**									29**	26**				

*p _ .05 (Two-tailed Test)
**p _ .01 (Two-tailed Test)
Underlined numbers are negative correlations.

Table 6

CORRELATIONS BETWEEN STATUS AND ACHIEVEMENT VARIABLES RELEVANT TO VOCATIONAL MATURITY AND FOUR SELECTED FACTORS AT THE TWELFTH GRADE

(N = 103)

	House Rating	School Curriculum	GPA	Voc. Aspiration Level	Participation In-School - no. of act. for 2 yrs.	Summer Employment	Out-of-School - no. act. for 2 yrs.	Pd. Wk. Experience Relevant to Voc. Pref.	Hobbies, Clubs, etc. Relevant to Pref.	Stability of Preference	Birth Order
Factor 3 - Occ. Info.: Hours of Work		21*	26**		25*					30**	
Factor 12 - Occ. Info.: Advancement & Transfer						22*	21*		20*		
Factor 13 - Occ. Info.: Nature of Duties				24*				24*			21*
Factor 22 - Implementation of Preference	20*								29**	20*	

*p _ .01 (Two-tailed Test)

**p _ .05 (Two-tailed Test)

Underlined numbers are negative correlations.